

What is claimed is:

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1. A method for delivering a biologically active molecule into a cell comprising: 1) covalently linking a molecule to the cell surface, wherein the molecule can act as a surface receptor, 2) complexing the biologically active molecule with a ligand for the surface receptor, and 3) contacting the biologically active molecule-ligand complex with the cell surface.
 2. The method of claim 1 wherein the biologically active molecule is selected from the group consisting of proteins, enzymes, vitamins, vaccines, transcription factors, hormones, carbohydrates, lipids, oligonucleotides, and nucleic acids.
 3. The method of claim 1 wherein the covalently linked molecule is biotin and the ligand is avidin.
 4. The method of claim 1 wherein the cell is a primary cell.
 5. The method of claim 1 wherein the cell is part of a tissue or organ of the human body.
 6. A method for delivering an oligonucleotide into a cell comprising complexing it with PEI and contacting the complex with the surface of the cell.
 7. The method of claim 6 wherein the PEI is conjugated to avidin and the cell surface is biotinylated.
 8. A method for delivering marker molecules into a cell, comprising 1) covalently linking a molecule to the cell surface, wherein the molecule can act as a surface receptor, 2) complexing the marker molecule with a ligand for the surface receptor, and 3) contacting the marker molecule-ligand complex with the cell surface.

9. A composition comprising a nucleic acid-polyethylenimine-avidin complex.
10. The composition of claim 9, wherein the nucleic acid is selected from the group consisting of DNA and oligonucleotide.
11. A cell comprising a covalently linked surface receptor molecule.
12. The cell of claim 11, wherein the cell is selected from the group consisting of primary cells *in vivo* or *ex vivo*, cultured cells, and cultured primary cells.
13. The cell of claim 11, wherein the cell is a nucleated blood cell.
14. The cell of claim 13, wherein the covalently linked surface receptor molecule is biotin.